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Edited by R. A. Fisher, F.R.S.

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or singing, or motor activities, why did they not try one method with two girls and the other with two more, leaving the fifth untrained for a time? This procedure should result in differences that are real and measurable and would not only show the effects of differences in environment but would demonstrate which of two alternative teaching techniques is the more effective. One could also study the effects of different diets, different play routines, different types of discipline. The quintts constitute an unparalleled group for all sorts of experimental work, for with them there could be almost perfect laboratory control. A greater variety of environmental contacts would certainly do the quintts no harm. Indeed, a wider variety of experience seems to be exactly what they need and should have from now on."

Professor Newman's own careful studies of the heredity-environment problem form, as was to be hoped, an important part of the book. With a clinical material composed of 50 pairs of one-egg twins reared together, 50 pairs of same sexed two-egg twins reared together, and 20 pairs of one-egg twins reared apart, he made two principal studies, Nature, as he puts it, having set up the experiments, leaving for him and his collaborators nothing but the analysis and interpretation of the results. They formu-

lated two questions. First, what are the relative shares of heredity and environment in determining the intrapair differences in two-egg twins reared together? And secondly, to what extent are differences in one-egg twins reared apart modified by increased differences in environmental conditions and which characters are so modified? The results cannot be set out in a short space. Very briefly it may be said that whereas there were no greater physical differences (except for body weight) between the members of one-egg twin pairs reared apart than there were between those reared together, there were greater mental differences between them. Thus, the average difference in I.Q. of twins reared together was 5.3; of twins reared apart it was 8.2. And there were correspondingly greater differences in scholastic achievements and personality traits. It is noteworthy that some of the findings did not bear out the view that I.Q. is an immutable measure of innate ability, insulated from all ordinary influences in the environment.

For a more detailed account of these crucial experiments and the conclusions derived from them readers must turn to the book itself. They will not be disappointed.

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social isolation which occurs there. The child, being brought up in two cultures—one at school and the other at home—becomes unsettled, and ultimately often comes to despise its parents. It may acquire a feeling of inferiority on account of its race, the more so if it has racial characteristics which draw attention to itself; and any kind of organisation of the mind in the highly mobile "hobo-house" districts of Chicago is most difficult. All this would fit in with my findings, namely, that poverty alone is not enough,

but that it is only where bad social conditions are productive of a difficult psychological situation that they are important in causing neurosis. And as none of the above factors are operative in London, this may account for the difference.

[These researches were carried out with funds from the Rockefeller Foundation and York Trust, received through the Department of Psychological Medicine at Guy's Hospital, and I wish to thank Dr. R. D. Gillespie for his permission to make use of the material.]

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from jealousy. How far the figures in evacuation areas were affected she did not know. They had had some problems with evacuated children in her area ; they were serious, but the numbers had not been great.

With regard to the time in the remand home, that ought not to be for long. Remand homes were not suitable places for a long stay ; the children were there because the court was not ready to deal with the case or because the court had not decided what to do, or because the child was waiting for a vacancy in an approved school. To keep children at a remand home for months when they had been committed to a school and knew that the school period would not begin until they actually arrived there was an unhappy position. Something could be done psychologically at the remand home, but the conditions were not suitable. The remand home was a place where the child could be cared for until arrangements were made for it. An observation centre was a place where it could stay for a few months and be watched by skilled people. The two could not be combined.

On the question of smaller offences, much depended on the attitude of the parents. Some such offences might be dealt with by the education authorities. She agreed that

the machinery of the juvenile court was too elaborate for these very small offences.

Mr. Marindin said that one of the main objections to birching was that it took place long after the offence ; if it took place immediately the effects were likely to be less harmful, and might even be beneficial. He also suggested that some of the more trifling offences could be handed to the local headmaster to deal with on the spot, without the intervention of the juvenile court. Mrs. Rackham agreed that it might be less harmful. The time lag was absurd ; the child was supposed to be medically examined to see if it was fit to be birched and the punishment was inflicted by a police officer who was wholly unconnected with the boy or the offence. Corporal punishment at school or at home was another question from punishment at the hands of the court. She thought what Mr. Marindin suggested often happened, but she would not mix it up with the law. The case had to be properly proved before any legal action could be taken.

The Chairman expressed the gratitude of the meeting to Mrs. Rackham for her talk. She also thanked those who had contributed to the discussion and she hoped they could combine in their different branches of life to make a better world for their children and grandchildren.

PHYSIOLOGICAL ZOÖLOGY

Articles appearing in forthcoming issues :

REACTIVITIES OF COLPODA DUODENARIA TO ENVIRONMENTAL FACTORS. II. FACTORS INFLUENCING THE FORMATION OF RESTING CYSTS. By C. V. TAYLOR and A. G. R. STRICKLAND, Stanford University.

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ON THE KILLING ACTION OF OPTICALLY ISOMERIC NICOTINES IN RELATION TO PROBLEMS OF EVOLUTION OF THE NERVOUS SYSTEM IN ANIMALS. By G. F. GAUSE and N. P. SMARAGDOVA, Institute of Zoölogy, University of Moscow.

THE PRODUCTION OF DUPLICITAS CRUCIATA AND MULTIPLE HEADS BY REGENERATION IN EUPLANARIA TIGRINA. By ROBERT H. SILBER and VIKTOR HAMBURGER, Washington University.

Edited by W. C. ALLEE, Professor of Zoölogy, The University of Chicago. Published Quarterly by the University of Chicago Press.

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Journal of Heredity

September 1940, Vol. 31, No. 9.—*Ear Pit and its Inheritance.*—By T. Quelfried.—In a very large family group of 150 persons this anomaly has been inherited as an irregular dominant.

Directives for Private and Public Population Policy in New England.—By F. Osborn.—The major economic factors acting as deterrents to large families are the cost of food and housing. Others are the cost of medical care, the loss of employment by the mother and the high cost of education. A sound population policy necessitates basic economic changes.

Marriage Records of Alumnae for the First Century of a Coeducational College.—By L. D. Hartson.—Returns were available for no less than 98 per cent of the 5,500 women who graduated during the 100 year period. The marriage rate was almost 100 per cent amongst the women of the first decade and fell steadily to 58 per cent during 60 years. The lowest figure, of 45 per cent, was that of the class of 1899. Thereafter there has been a recovery, and allowing for the future marriage of some of the graduates of recent years it is likely that the figure for women of the late twenties of this century will reach 70-75 per cent. Marriages are also occurring a year or two earlier on the average than was the case 40 years ago. Reports from other colleges indicate that the recent increase has occurred in (exclusively) women's colleges also.

Differential Fertility in the White Population in early America.—By A. J. Jaffe.—An examination

of the United States census data from 1800 permits estimates to be made of standardized reproduction rates. In 1800, assuming the gross reproduction rate in the rural areas to be 100, that of cities under 10,000 was 70; that of cities of 10,000-25,000 was 57; that of cities of 25,000-50,000 was 62; and that of New York City 64. These differences between urban and rural areas occurred in each state and territory in 1810, 1820, 1830 and subsequent years. Several methods have been used for investigating differential fertility in relation to prosperity. For example, in three large cities the wards could be differentiated according to the proportion of persons owning property above a given amount. It was found that taking the gross reproduction rate of the least prosperous wards as 100, the intermediate group gave a figure of 82 and the most prosperous wards 80. In Boston the tax records for 1830 showed the amount of real and personal property owned by the persons living in the various wards. Taking the reproduction rate of the poorest wards as 100, the intermediate wards gave 85 and the most prosperous 58. Altogether ten separate sets of data have provided an impressive weight of evidence for the view that the present-day association between prosperity and relative infertility was already well established at least as far back as 1800. Either contraceptive techniques were widely known much earlier than is commonly supposed, or else this explanation of the mechanism underlying differential fertility is inadequate. The author accepts the former view without discussing the alternative possibility.

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